

MONTANA WATER PLAN

Ground Water Section

FINAL

February 1999

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MONTANA

GROUND WATER PLAN

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LIST OF ACRONYMS

BER	Board of Environmental Review
BOG	Board of Oil and Gas
EQC	Environmental Quality Council
BWWC	Board of Water Well Contractors
DEQ	Department of Environmental Quality
DNRC	Department of Natural Resources and Conservation
CD	Conservation District
GIS	Geographic Information System
GWA	Ground Water Assessment Act
MBMG	Montana Bureau of Mines and Geology
MDA	Montana Department of Agriculture
MDC	Montana Department of Commerce
MDR	Montana Department of Revenue
MWCC	Montana Watershed Coordination Council
MWWDA	Montana Water Well Drillers Association
MUS	Montana University System
NRCS	Natural Resources Conservation Service
NRIS	Natural Resources Information System
RIT	Resource Indemnity Trust

BACKGROUND

The Montana Ground Water Plan was developed in response to concerns identified by citizens at public scoping meetings and as a result of a recommendation of the *1992 State Water Plan Section: Integrated Water Quality and Quantity Management*. This section states: "The [DNRC] shall formulate and adopt and amend, extend, or add to a comprehensive, coordinated multiple-use water resources plan known as the 'state water plan'. The state water plan may be formulated and adopted in sections, these sections corresponding with hydrologic divisions of the state. The state water plan must set out a progressive program for the conservation, development, and utilization of the state's water resources and propose the most effective means by which these water resources may be applied for the benefit of the people, with due consideration of alternative uses and combinations of uses (MCA 85-1-203)." This effort also addresses a U.S. Environmental Protection Agency (EPA) recommendation for states to develop a comprehensive ground water protection program.

Initial work on the ground water plan began in 1992. A State Ground Water Planning Committee consisting of 22 ground water users, regulators, legislators, well drillers, and academicians identified a number of recommendations to assist citizens in preserving Montana's aquifers to sustain current and future beneficial uses. To guide plan formation, informational meetings were held around the state and a survey of almost 1,000 well owners, water interest groups, ground water discharge permit holders, and city and county governments was conducted. After a long hiatus resulting from personnel changes and the reorganization of state government, a newly formed Ground Water Work Group resumed work on the plan in 1998 by building on the information collected by the original planning committee. Comments on the plan were again solicited from members of the public, special interest groups and agency specialists through targeted mailings. To further gauge public sentiment regarding ground water issues, public meetings were held in major cities around the state. Finally, a series of collaborative editing sessions were held by the Ground Water Work Group to develop consensus language for the Plan's recommendations and implementation provisions.

The plan is divided into three subsections: Protection, Education and Remediation. Each of these subsections present a series of issues which have been identified through the plan development process. Under each issue is a set of recommendations designed to address each individual issue. Also under each issue is a set of "options considered", but not recommended. Most of these options were not included as recommendations because consensus was not reached regarding their inclusion.

CURRENT CONTEXT

Under the Montana Water Use Act, ground water is defined as "any water that is beneath the ground surface." The quality and availability of ground water in Montana vary greatly across the state. Aquifers in western Montana are typically found in unconsolidated intermontane, alluvial valley-fill materials that readily yield large quantities of high quality water to shallow wells. Also in the west, progressively more wells are being drilled into aquifers within bedrock, as development infringes on the edges of the intermontane valleys. Residents in eastern Montana commonly obtain ground water from aquifers occurring in unconsolidated, alluvial valley fill materials, glacial outwash and consolidated sedimentary formations. Eastern Montana aquifers typically yield less water than those of the west, and the water is more mineralized. The water in some eastern aquifers is suitable only for livestock consumption.

Approximately 217 million gallons each day (mgd) is withdrawn from aquifers underlying Montana. In 1990, ground water withdrawals were used for irrigation (90 mgd or 41.5 percent);

public water supply and rural domestic use (66 mgd or 30.4 percent); industry (30 mgd or 13.8 percent); livestock (16 mgd or 7.4 percent); and mining (15 mgd or 6.9 percent) [USGS Circular 1081, 1993]. More than 50 percent of Montana's citizens rely on ground water for drinking and household use.

To secure a right to use ground water at a rate greater than 35 gallons per minute (gpm), or more than 10 acre-feet per year (afy), requires a permit from the Montana Department of Natural Resources (DNRC). More than one well or spring linked together also requires a permit if the combined withdrawals exceed 35 gpm or 10 afy. For a ground water use of less than these amounts, an appropriator simply should file a notice of completion with DNRC within 60 days of developing a well or spring. The applicant will then receive a water use certificate. These permits and certificates secure the appropriator's right to use ground water. The well driller is required to comply with construction standards adopted by the Board of Water Well Contractors and to submit a well log for each new well to the Department of Natural Resources and Conservation.

Across Montana, activities such as spills, improper waste disposal, and land use practices have caused ground water contamination. The Montana Water Quality Act (75-5-101 through 641, MCA) is designed to protect, maintain, and improve the quality of Montana's water resources. Contained within the Water Quality Act are provisions to prevent degradation of water quality and to protect beneficial uses of state water. Pursuant to the Water Quality Act, the Board of Environmental Review must establish classifications for all state waters and establish water quality standards to protect human health and the environment. A permit system is also administered under the Water Quality Act to control discharges of contaminants to surface water and ground water. In addition to the Water Quality Act, other statutes that include water quality protection provisions have been passed. These include laws to control mineral extraction and processing, hazardous and solid waste management, underground storage tank installation and monitoring, pesticide and fertilizer management, and municipal and domestic sewage disposal. Any of these activities may threaten the quality of ground water.

Unanticipated spills and releases may cause contamination of ground water at almost any location in Montana, particularly along transportation routes. Abandoned or inactive sites where ground water is contaminated or where wastes have been improperly disposed of are being discovered in many locations. More attention is being focused on ground water pollution from mining and industry, sewage and improper animal waste management, and certain farming practices which cause saline seeps.

The recommendations made under the plan are stated as who "should" do what. There was much discussion and some disagreement over this term among the group that developed this plan. Some members continue to prefer the stronger term "shall." The term "should" was used because the plan provides overall direction for ground water programs that have been widely agreed to. It also recognized that some of the recommendations will require additional resources to implement, and that unless the additional resources are available, they will not get done. Furthermore, funding mechanisms are determined by the Legislature and priorities may be set by that process.

POLICY STATEMENT

It is the policy and practice of Montana to protect and improve the quality and quantity of its ground water resources. The Montana Ground Water Plan sets forth recommendations for improving public and private management of the State's ground water with a goal of sustaining current and future uses.

ISSUES, OPTIONS, AND RECOMMENDATIONS

Subsection A: Ground Water Protection Strategy

- Goal:** To protect and improve the quality and quantity of Montana's ground water resources in order to sustain current and future uses and to protect public health.
- Purpose:** To provide government, businesses, and individuals with the best possible information and guidance for making decisions that protect and improve Montana's ground water.

Over 50 percent of all Montana citizens, which includes 95 percent of rural residents, depend on ground water for their domestic water supply. In most cases Montanans enjoy a wholesome and plentiful supply of ground water. Yet where ground water has been contaminated, the public has become increasingly aware that the cost of clean-up generally exceeds the financial ability of most communities and state government. Therefore, along with enforcing the law, citizens need new ways to prevent ground water contamination and to protect this vital resource.

Since 1986, the state has made considerable progress in establishing programs to protect ground water. **Appendix A** is a current listing of ground water protection-related programs within the state. This section of the Montana Ground Water Plan contains recommendations aimed at coordinating implementation of these programs and determining where there are gaps or duplication of services.

Issue 1 - Ground Water Resources and Uses: Inventory, classify, and monitor ground water to determine existing conditions.

Because available data indicate that a number of Montana's surface water basins are over appropriated, the Montana Legislature closed several of them to future appropriations. These river basins include the Upper Missouri, Jefferson, Madison, Teton, Upper Clark Fork, Beaverhead and Red Rock. As a result of these surface water closures, and surface water shortages elsewhere, more people are turning to ground water to satisfy their water needs. The State should ensure that these ground water appropriations do not adversely affect surface water flows or uses. Baseline information on the status of ground water resources is needed to protect ground water quality, to sustain ground water supplies, to make better ground water management decisions, and to define the role surface water interaction plays in ground water quality and availability. Montana does not yet have comprehensive information on the quality and quantity of its ground water. The options recommended below will add to the efforts to address this need.

Options Recommended

1. The Department of Natural Resources, Montana Bureau of Mines and Geology, the Board of Water Well Contractors, and the Montana Water Well Drillers Association should work together to determine the data required on a well log and then ensure these data are collected and reported accurately and completely.
2. The Department of Environmental Quality, the Department of Natural Resources and Conservation, the Board of Water Well Contractors, the Board of Oil and Gas Conservation, and the Montana Department of Agriculture should encourage all persons collecting and submitting water samples for regulatory purposes, to provide minimum well construction and locational data. Each sample should be clearly marked with the township; range; and section; latitude and longitude of the well; altitude of the well, and the method by which it was determined; the county name; the date and time taken; the depth of the well; the depth of the screened or open interval; and the static water level. In addition, to the extent possible, persons should be encouraged to collect EPA's minimum set of data elements for ground water quality. This information is necessary to build a consistent and better water resource data base.
3. Watershed groups, with assistance from Conservation Districts, Local Water Quality Districts the Montana Bureau of Mines and Geology, the Department of Environmental Quality, and the Department of Natural Resources and Conservation, should be encouraged to: 1) participate in local ground water planning; 2) perform a comprehensive evaluation of existing ground water uses; 3) plan for future ground water uses; and 4) estimate the quantities of ground water available to meet existing and future needs.
4. The Legislature should evaluate whether existing funding is adequate for the Montana Bureau of Mines and Geology to fulfill the requirements of the Ground Water Assessment Act. Any restructuring of Resource Indemnity Trust funding mechanisms should include Ground Water Assessment Act implementation as a high priority.
5. When considering ground water grant applications, the Department of Natural Resources and Conservation (under the Renewable Resource Development Grant Program) should give priority to those applications that either protect public health, ground water and ground water recharge, or define the role of irrigation, septic systems, constructed wetlands, and sewage lagoons in ground water recharge and discharge, particularly where there is a potential connection to surface waters.
6. When considering ground water grant applications, the Department of Environmental Quality (under the Clean Water Act Section 319 Nonpoint Source Grant Program) should give priority to those applications that either protect public health, ground water and ground water recharge, or define the role of irrigation, septic systems, and constructed wetlands in ground water recharge and discharge, particularly where there is a potential connection to surface waters.
7. Where appropriate, regional assessments conducted under the Montana Bureau of Mines and Geology's Ground Water Assessment Program should consider the interrelationship between surface and ground water.

8. County planning agencies should consider identifying areas prone to subdivision development where ground water supplies may be present because of irrigation recharge. Alternative water sources should be considered to address potential supply deficits in these areas.

Other Options Considered

1. Establish standard methods for production testing new wells in Montana's aquifers.
2. Coordinate the establishment of ground water classifications on tribal lands with tribal governments so that these classifications are compatible with those on non-tribal lands in accordance with ARM 17.30.1002.

Issue 2 - Sources of Pollution: Identify those activities and substances, including naturally occurring substances, that pollute ground water in Montana.

To help identify and track ground water contaminants, site information collected by federal, state, and local agencies should be available and linked through Natural Resource Information System for ready access and comparison. In addition, those activities that affect the flow or chemical characteristics of ground water should be determined. Similarly, the biological components of ground water need better definition.

Saline ground and surface water are gradually developing over the Northern Great Plains as a result of annual cropping systems and less dependence on perennial forage. The salts are naturally present in the ground water from the native bedrock and overlying soil. Land use management redistributes the saltload, bringing it closer to the surface and/or into solution in the locally derived water table.

Options Recommended

1. State and local agencies, and those parts of the Montana University System that manage ground water data, should ensure that their data are available to the public and that their data bases are compatible, and that Geographic Information System (GIS) coverages derived from these sources can be readily incorporated into a state-wide GIS clearinghouse such as that managed by the Natural Resource Information System.
2. The Department of Environmental Quality and Local Water Quality Districts should encourage the inventory and monitoring of potential contaminant sources in communities that use ground water for drinking water.
3. The Department of Environmental Quality and Local Water Quality Districts should evaluate the long-term effect on ground water from documented ground water pollution, including mining, agriculture, business, industry and development, sewage, and waste management.
4. When considering ground water grant applications, the Department of Natural Resources and Conservation (under the Renewable Resources Development Grant Program) should give priority to grant applications that assess how bacteria and viruses are introduced and transported through aquifer materials and that determine the fate and transport of industrial and agricultural chemicals in ground water, particularly where there is a potential connection to surface water.

5. When considering ground water grant applications, the Department of Environmental Quality (under the Clean Water Act Section 319 Nonpoint Source Grant Program) should give priority to grant applications that assess how bacteria and viruses are introduced and transported through aquifer materials and that determine the fate and transport of agricultural chemicals in ground water, particularly where there is a potential connection to surface water.

Other Options Considered

1. Create a Montana Pollution Prevention computer network which: 1) compiles information on contaminants, Best Management Practices, and alternative methods of preventing ground water pollution, and 2) facilitates exchange of information between agencies and individuals working in the field.

Issue 3 - Management and Protection: Help Montanans protect the State's ground water.

Improved management practices are needed to protect the state's ground water from contamination. Knowingly or unknowingly, Montanans open ground water to potential degradation through many activities in their daily lives. This may occur directly through routine sewage disposal practices or accidental leaks and spills, or more indirectly by use or handling of toxic or potentially contaminating materials on the land surface. Industrial sites, animal confinement facilities, and even certain agricultural activities may expose ground water to potential contaminants. Pathways for contaminant flow to ground water may be opened through exploratory well drilling, water well construction, and seismic exploration activities. Existing land use practices and the conversion of agricultural land to residential land, coupled with inappropriate domestic drinking water well locations, are significantly affecting ground water in some areas of Montana. Improved water management through land use changes in both dryland and irrigated agriculture are needed to decrease saline conditions.

Individuals, watershed groups, and other water users should be encouraged to define and protect local ground water resources. Citizen participation in the state's ground water permitting process is one means to accomplish this. Strategies need to be developed to strengthen the ability of local and state agencies to effectively and proactively implement ground water protection programs. Creation of Local Water Quality Districts is one way to accomplish this. Government should provide technical support and information to the public to prepare them to address ground water issues. There is a need for better coordination and systematic evaluation of the many ground water protection programs dispersed among various federal, state and local agencies. Consistent enforcement and administration of statutes intended to protect ground water is necessary for the public to have confidence in existing regulatory programs.

Options Recommended

1. Grants funded from the Resource Development Grant Program should be allocated so that priority is given to projects that: 1) locate and properly seal abandoned water wells and bore holes, and 2) control existing uncontrolled flowing artesian wells.
2. State agencies with ground water programs should regularly evaluate the adequacy and effectiveness of their ground water protection programs and submit the results of these evaluations to the Environmental Quality Council. Beginning in 2001, the Environmental Quality Council should review these evaluations and publish a summary report every four years that:

- a. contains the results of the agencies' ground water protection program evaluations including enforcement actions;
 - b. describes the status of Montana's ground water resources in relation to ongoing or recurring problems such as well contamination;
 - c. reports on implementation of the Montana Ground Water Plan.
 - d. makes recommendations to improve or modify the Montana Ground Water Plan.
3. The Department of Environmental Quality, the Department of Agriculture, and the Department of Natural Resources and Conservation should ensure compliance with applicable ground water quality standards.
4. Watershed groups, with support from Conservation Districts, the Montana Bureau of Mines and Geology, the Department of Environmental Quality, and the Department of Natural Resources and Conservation, should be encouraged to manage and protect ground water problems at the local level.
5. The Ground Water Work Group of the Montana Watershed Coordination Council should encourage cooperation and communication between state agencies, Local Water Quality Districts, the Montana Salinity Control Association, county agricultural extension agents, and local watershed planning groups in addressing ground water issues at the local level.
6. The Department of Environmental Quality, the Department of Natural Resources and Conservation, and the Montana Department of Agriculture should develop and disseminate information on Best Management Practices and Water Quality Protection Practices, including waste minimization, to users of and dischargers to ground water, through county governments, county libraries and water-related Internet websites.
7. The Department of Environmental Quality should continue to encourage and support local collection centers to assure proper disposal of automotive and household hazardous wastes.
8. The Legislature should reauthorize and continue to fund the Regional Pesticide Waste Collection Program administered by the Department of Agriculture.
9. The Department of Environmental Quality should encourage waste minimization programs for all permit applicants when there is a potential for ground water impacts.
10. The Departments of Natural Resources and Conservation and Environmental Quality should encourage the Natural Resource Conservation Service to provide funding to locate and properly seal abandoned water wells and boreholes. The Natural Resources and Conservation Service, within program limitations and available funding, will provide technical advice and financial assistance to conservation district cooperators who request help on decommissioning wells.

Other Options Considered

1. The Department of Natural Resources and Conservation should evaluate the use of professional arbitrators, mediators, and staff of the Montana Consensus Council to address ground water disputes.

2. The Department of Environmental Quality should identify and address those management practices that contribute to ground water contamination.
3. The Department of Environmental Quality should evaluate water conservation practices to assure they will not cause water quality problems.
4. Encourage creative solutions to issues and costs related to installing water and sewage collection systems to improve ground water contamination areas that now use septic systems and wells.

Subsection B: Ground Water Education Strategy

Goal: To engage Montanans of all ages in action (personally or publicly) that supports the wise use, management and protection of ground water.

Purpose: To develop and support effective ground water education strategies and programs that include information, training, and action.

Education is critical for protecting ground water. Ground water protection requires pollution prevention. This can only be accomplished by people who are aware of the effects their actions have on ground water. Informational materials, education, technical assistance, and training on basic ground water laws, characteristics, and processes are essential prerequisites to successful ground water policy implementation. This subsection of the Montana Ground Water Plan identifies educational assistance and information necessary to effectively implement all components of this plan.

Issue 4 - Public Awareness: Expand public awareness of ground water.

Many Montanans may not be aware that more than 50 percent of Montana's domestic water comes from ground water sources, and that individual actions can pollute those sources. There is a real need to expand public awareness of issues related to ground water. Activities that were once considered harmless are now known to threaten ground water (for example, septic systems, agricultural runoff, and using waste oil for dust suppression). Citizens should know that ground water is a valuable resource; that it can be overused or permanently contaminated; that the costs of pollution clean-up can be prohibitive, and in some cases, infeasible; and that pollution prevention is easier than clean-up.

Several ground water education programs have the goal of elevating public awareness and understanding of ground water. For example, Project WET (Water Education for Teachers), Local Water Quality Districts, and the Montana Watercourse's "Know Your Watershed" workshops all provide community education opportunities that include general ground water information.

Options Recommended

1. State and local agencies with ground water protection programs should coordinate with each other, and with educational groups, to develop and deliver educational programs to ensure that every Montanan is aware of the importance of ground water. For example, coordination may be enhanced through groups such as the Montana Watershed Coordination Council.
2. The Montana University System, including the Extension Service, the Water Resources

Center, the Montana Watercourse, and the Environmental Studies Program should collaborate on conducting statewide survey(s) to determine ground water education needs and to assess public understanding and knowledge of actions being taken to protect ground water in Montana.

3. The Department of Natural Resources and Conservation, the Department of Environmental Quality, the Montana University System, and others should seek funding in collaboration with local ground water protection programs, such as the Local Water Quality and Conservation Districts, to inform citizens of the benefits and responsibilities of personal and community actions to protect ground water.

Other Options Considered

1. Identify and stratify target audiences, based on age, demographics, occupation, education, geographic location (for example, curricula for teachers, Extension faculty, cattle feedlots, irrigators, industry, etc.)
2. Develop appropriate awareness tools (for example, limited focus and limited content.)
3. Identify and utilize the appropriate place, delivery mechanism, and price investment by audience, time, effort, and promotional angle.

Issue 5 - Understanding and Making Knowledgeable Decisions: Increase public knowledge of ground water characteristics and processes, and prepare citizens to take positive action to protect and enhance Montana's ground water.

A basic knowledge and understanding of ground water is necessary to make informed personal and public choices about ground water use and management, and to avoid land use practices that can adversely impact aquifers. Ground water education and information resources should target audiences (for example, agricultural interests, private well-owners and septic system owners) to prepare citizens to protect ground water and to manage their systems responsibly. Ground water seminars should be conducted for city and county decision makers to equip local leaders with the knowledge they need to institute appropriate protection strategies. Citizens who understand the economic, ecological, and health costs of contaminated ground water, who know that clean-up of ground water can be prohibitively expensive, and who see the connection between conservative uses of ground water and a sustained supply, are citizens prepared for responsible management of ground water resources.

A number of ground water education programs in Montana, currently work to improve public understanding and knowledge of ground water attributes and processes. **Appendix B** identifies existing ground water education programs in Montana. The ongoing work of the Montana Bureau of Mines and Geology's Ground Water Assessment Program contributes valuable information, data, and interpretations that can only strengthen these educational programs. Additionally, the State Library has available through the Natural Resource Information System, a Montana Ground Water Atlas showing the state's major aquifer systems (in hard-copy and electronic forms). It is critical that these efforts receive financial support to ensure their effectiveness in realizing the following recommendations.

Options Recommended

1. Ground water education programs should be a priority. Local, state and federal entities should support and assist in obtaining funds to provide education programs that include the following attributes:
 - a. Inform Montanans how aquifer characteristics affect ground water's sensitivity to various types of pollutants;
 - b. Develop, refine, and deliver local, regional, and state programs to ensure that Montanans understand ground water and aquifer definitions, attributes, uses, quality and quantity issues, relationships to surface water, and protection measures;
 - c. Inform Montanans about the economic, ecological, and health consequences of ground water pollution. This involves describing the benefits of preventing ground water pollution versus the costs of ground water clean-up, and providing models of successful ground water protection strategies;
 - d. Inform Montanans about activities that can pollute ground water, and ways that contaminants reach ground water (for example, agricultural, industrial, mining and municipal sources, and abandoned wells, bore holes, sumps, improperly constructed wells, injection wells, etc.)
 - e. Inform Montanans about water conservation practices and new technologies to protect ground water.
 - f. Inform Montanans about the history and problems associated with uncontrolled flowing artesian wells in Montana, and the need to address this problem.
 - g. Inform Montanans about the importance of proper water well location and construction.

Other Options Considered

1. Develop and deliver a planned, coordinated, multi-part educational program to elevate the knowledge-level of targeted audiences directly involved with ground water.
2. Focus educational efforts on actions that can be taken by individuals, groups, or organizations to protect and reclaim ground water.

Issue 6 - Technical Assistance, Training, and Action: Enhance Montanans' abilities to take action to prevent contamination and to clean-up contaminated ground water.

Montanans will benefit from ready access to technical assistance and training that will enhance their skills and abilities to use current technology to prevent pollution and clean-up contaminated ground water. A variety of programs exist in Montana which provide training and technical assistance for targeted audiences (see **Appendix B** for listing). Water and wastewater operators, specifically, have access to technical training and assistance through several programs. The Montana Rural Water Systems offers information for city governments about wellhead protection, and provides classes on wellhead protection and well construction for interested citizens, local officials, water and wastewater operators, and others. The Department of Environmental Quality's Source Water Protection and Wellhead Protection Programs offer a

voluntary program emphasizing local assessment, education, and training for professionals working with drinking water systems to protect public water supplies. Existing programs should be funded and actively coordinated to assure their continued effectiveness.

Options Recommended

1. The Board of Water Well Contractors, in cooperation with the Department of Natural Resources and Conservation and the Montana Bureau of Mines and Geology, should coordinate additional training on how to accurately report well locations on well logs. Also, the Board of Water Well Contractors, Montana Bureau of Mines and Geology, and Department of Natural Resources and Conservation should provide additional training for drillers to enhance the accurate description of geologic materials on well logs and in reports.
2. The Board of Water Well Contractors should continue to provide enhanced training for water well drillers and consultants on proper well construction methods and techniques to control flowing artesian wells.
3. The Montana Watershed Coordination Council should continue its water information and education work group and, together with its ground water work group, help coordinate ground water education programs.
4. Ground water education programs in Montana should provide educators with technical support and training to facilitate student involvement in community action projects which protect, sustain, or clean-up Montana's ground water.
5. Ground water education programs in Montana should inform citizens and industry how they can initiate and lead efforts to protect and manage ground water and participate in ground water clean-up, with assistance from educational institutions, and local, state and federal agencies.
6. Ground water education programs in Montana should provide continuing education to businesses, individuals, local governments and agencies to encourage the use of appropriate technology to enhance, protect, and clean-up Montana's ground water.
7. Educational institutions, together with local, state and federal agencies, should be responsible for continuing and increasing ground water education through local ground water workshops and contacts with individual water users.
8. Government agencies should provide public access to sources of information on ground water laws, regulations, technologies, clean-up standards, economic incentives, and available assistance.

Other Options Considered

1. Provide research opportunities to support businesses, individuals, and agencies who are directly involved with the use of appropriate technology to enhance and protect Montana's ground water.
2. Identify ground water education centers of excellence and recommend educational entities or agencies to provide informational resources to businesses that show how water quality improvements can help the "bottom-line" and enhance value.

Subsection C: Ground Water Remediation Strategy

Goal: To eliminate or reduce harmful impacts to human health and the environment posed by ground water contamination.

Purpose: To coordinate regulatory activities to effectively address clean-up of ground water contamination.

Legislation passed in the last ten years established or enhanced a variety of regulatory programs for solid waste landfills, underground fuel storage tanks, mines, agricultural chemicals, and other sources of pollution. Due to pollution liability concerns, property assessments to document the degree of contamination that may be present at a site are standard for commercial property sales. As a result of increased regulatory requirements, as well as heightened public awareness about pollution, numerous sites with ground water contamination have been discovered in Montana. This section of the Montana Ground Water Plan is intended to ensure that responsible and appropriate action is taken at those sites.

Issue 7 - Administration and Standards: Ensure compliance with Montana and federal environmental regulations and standards to accomplish site clean-up consistently and thoroughly.

Administrative procedures and clean-up standards differ under Montana's various environmental laws. Actions that responsible parties are required to undertake in the event of a pollutant release should be dependent upon the severity of the threat to human health and the environment. Currently, clean-up actions are dictated by which regulatory program has jurisdiction over the pollutant release. For example, a spill of an herbicide could result in multiple violations of environmental regulations including, but not limited to: the Montana Water Quality Act, Montana Pesticides Act, Montana Agricultural Chemical Ground Water Protection Act, Resource Conservation and Recovery Act, Comprehensive Environmental Cleanup and Responsibility Act, and Metal Mine Reclamation Act. Although these laws serve to protect human health and the environment, they must be implemented effectively and more consistently.

Options Recommended

1. The Montana Departments of Environmental Quality, Agriculture, Natural Resources and Conservation, and the Board of Oil and Gas should establish an Interagency Remediation Committee (Committee) composed of representatives of relevant programs. The Committee would establish regular meeting schedules to review newly reported cross-jurisdictional contamination sites to ensure a timely and consistent response. The Committee should concentrate its efforts on complex sites with the greatest risk to public health and the environment, and on solving generic recurring clean-up concerns. The Committee would be organized and led by the Department of Environmental Quality's Remediation Division.
2. The Montana Departments of Environmental Quality, Agriculture, Natural Resources and Conservation, and the Board of Oil and Gas should establish policies to develop and consistently apply water quality and soil standards for clean-up of contaminated sites and use of standards applied to historic contamination. The policies may allow for site specific flexibility based on risk, current and future use, toxicity, exposure, costs/benefits, and public input.

3. The Montana Departments of Environmental Quality, Agriculture, Natural Resources and Conservation, and the Board of Oil and Gas should inform government, business, and individuals about the requirement to meet water quality standards, and the consequences for not meeting those standards.
4. The Department of Environmental Quality should establish policies and procedures to consistently and quickly handle permits and/or waivers to permits for urgent situations where short-term discharges will occur for clean-up purposes only.
5. The Department of Environmental Quality should develop rules to require reporting of spills and release of contaminants at unpermitted sites. The rules should clearly identify when, how, and to whom spills are to be reported and set guidelines for minimum quantities that must be reported. The Department should also write rules to require reporting of historic contamination when it is discovered. The rules should clearly identify when, how, and to whom discoveries of historic contamination are to be reported.
6. The Department of Environmental Quality should investigate and inventory ground water nonpoint source pollution and determine the need for clean-up, as time and resources allow.
7. State and local agencies should encourage inventories of potential contaminant sources in communities that use ground water for drinking water. The Department of Environmental Quality should assist public water supplies in delineating areas that contribute to water supplies and assess potential threats through the Source Water Protection Programs.
8. The Environmental Quality Council, in collaboration with the Department of Environmental Quality's Remediation Division, and the Department of Commerce, should undertake a study to determine the need for and utility of tax and other types of financial incentives to encourage voluntary clean-up and redevelopment of contaminated sites within Montana. The incentive should be structured in a way to be sure that only persons with no prior connection to the property and who did not contribute to the contamination receive the incentive.
9. The Department of Environmental Quality, and local agencies responsible for the permitting of septic systems, should ensure, to the extent possible, that unintended cumulative effects of septic systems will not exceed nondegradation standards.
10. The Board of Environmental Review should adopt standards and regulations that will prevent pathogen contamination of ground water and protect public health.

Other Options Considered

1. Standardize clean-up levels among remediation programs.
2. The Legislature should amend the Metal Mine Reclamation Act to require a reclamation bond for all mining and milling operations including small mining and milling operations excluded from permitting and bonding requirements, for example, recreational miners.
3. The Legislature should amend the Metal Mine Reclamation Act to require a financial assurance test for mine permit applicants showing their ability to implement water remediation measures.

4. The Legislature should amend the Water Quality Act to remove the cap on the Water Quality Rehabilitation Act so that all penalties collected accumulate in the account to fund clean-up and program activities.

Issue 8 - Inventory and Characterize Contaminated Sites: Develop a system to identify, catalog, and characterize contaminated sites in order to focus the state's resources.

Montana does not have a comprehensive inventory system to track the location or to evaluate the status of contaminated sites. An inventory system would benefit potential property buyers or existing property owners by making it easier, through contact with one system, to determine if any state agencies have identified existing or potential pollution at a particular site. The state cannot ensure compliance and oversee clean-up at all sites, therefore, a comprehensive inventory would assist agencies in determining the severity of pollution at specific locations relative to other sites for prioritization purposes.

Options Recommended

1. The Natural Resource Information System should maintain and improve the statewide clearinghouse that links the location of contaminated sites regulated by the Departments of Environmental Quality, Agriculture, Natural Resources and Conservation, the Board of Oil and Gas, and Local Water Quality Districts. Each agency should contribute consistent information to create and maintain the network.
2. The Departments of Environmental Quality, Agriculture, Natural Resources and Conservation, and the Board of Oil and Gas should regularly share information on contaminated sites and clean-up activities at those sites through the Interagency Remediation Committee. The agencies should initially describe how each program sets priorities and determines the type of information and frequency of reporting needed. At a minimum, the agency reports should include a listing of any new sites discovered and plans for remediation. For those identified as significant to the Committee, the reports should also include: (1) the status of ground water contamination; (2) an evaluation of the effectiveness of clean-up activities; and (3) data necessary to assess the potential for the spread of contamination.

Other Options Considered

1. Prioritize contaminated ground water areas for remediation based on use, toxicity, exposure, costs/benefits, and cumulative effects.

Issue 9 - Research and Technology: Support waste recycling and new pollution clean-up and containment methods.

Montana's citizens and remediation programs would benefit from new research and methods for ground water clean-up. Research and the development and implementation of new technologies are necessary steps to solving pollution problems that exist today and preventing pollution in the future. Developing new technologies and new solutions requires some risk that must be balanced with the potential benefits of the new technologies.

Options Recommended

1. The Montana University System, in collaboration with the Department of Environmental Quality, should encourage the evaluation and implementation of innovative technologies

for cleaning up ground water contamination. This could include, but not be limited to, independent data collection, testing under Montana conditions, repeatable experimental results by independent researchers, peer review, performance monitoring, and contingency provisions in the case of failure of the innovation.

2. The Department of Environmental Quality and the Department of Natural Resources and Conservation should explore and develop options for supporting innovative advancements in technology and cost-effective protection of ground water quality and quantity at the state and local levels.

Other Options Considered

1. It is the policy of the State of Montana to encourage the development and use of innovative technologies for cleaning up water contamination.
2. Promote recycling and reusing wastes recovered from ground water clean-up sites where appropriate.
3. Support research on new clean-up technologies including those designed to assist natural purifying processes and plume management.
4. Evaluate pollution clean-up and containment methods to assure cross-media contamination will not occur.
5. Establish a link between research and clean-up needs.

GROUND WATER PLAN IMPLEMENTATION

Issue 1 - Ground Water Resources and Uses

Rec. No.	Action	Implementing Entity(ies)	Timeframe
1.1	(1) Determine data required on a well log; (2) Ensure well data are collected and reported accurately.	DNRC, MBMG, BWWC, and MWWD.	(1) A new well log form has been developed and issued. (2) Ongoing effort.
1.2	(1) Encourage collection of minimum well construction and locational data; (2) encourage collection of EPA's minimum data elements for ground water quality.	DEQ, DNRC, BWWC, BOGC, and MDA.	Initiate immediately and continue effort.
1.3	(1) participate in local ground water planning; (2) evaluate existing ground water uses; (3) plan for future uses; (4) estimate the quantities of ground water available to meet existing and future demand.	Watershed groups, CD's, Local Water Quality Districts, MBMG, DEQ, and DNRC.	Initiate immediately and continue effort.
1.4	(1) Evaluate whether existing funding is adequate to fulfill the requirements of the Ground Water Assessment Act.	The Legislature and MBMG.	RIT restructuring proposal submitted to the 1999 Legislature would guarantee a constant funding level for the GWA program.
1.5	Give priority to grant applications that: (1) protect public health, ground water and recharge, or (2) define the role of irrigation, septic systems, constructed wetlands, and sewage lagoons in ground water recharge and discharge.	DNRC Resource Development Grant Program.	Effective immediately.

Rec. No.	Action	Implementing Entity(ies)	Timeframe
1.6	Give priority to grant applications that: (1) protect public health, ground water and recharge, or (2) define the role of irrigation, septic systems, and constructed wetlands in ground water recharge and discharge.	DEQ Nonpoint Source Grant Program.	Initiate immediately and continue effort.
1.7	Regional assessments should consider the interrelationship between ground and surface water.	MBMG Ground Water Assessment Program.	Initiate immediately and continue effort.
1.8	Identify areas prone to subdivision where ground water may be present because of irrigation recharge.	County planning agencies.	Initiate immediately and continue effort.

Issue 2 - Sources of Pollution

Rec. No.	Action	Implementing Entity(ies)	Timeframe
2.1	Ensure that ground water data are compatible, and that GIS coverages derived from these sources can be readily incorporated in to a state-wide GIS clearinghouse.	State and local agencies, and those parts of the Montana University System that manage ground water data.	Initiate immediately and continue effort.
2.2	Encourage the inventory and monitoring of potential contaminant sources in communities that use ground water for drinking.	DEQ and Local Water Quality Districts.	Effective immediately.
2.3	Evaluate the long-term effect on ground water from pollution including mining, agriculture, business, industry and development, sewage, and waste management.	DEQ and Local Water Quality Districts.	ASAP - As time and resources permit.

Rec. No.	Action	Implementing Entity(ies)	Timeframe
2.4	Give priority to grant applications that: (1) assess how bacteria and viruses are introduced and transported through aquifers; and (2) determine the fate and transport of industrial and agricultural chemicals in ground water.	DNRC Resource Development Grant Program.	Effective immediately.
2.5	Give priority to grant applications that: (1) assess how bacteria and viruses are introduced and transported through aquifers; and (2) determine the fate and transport of industrial and agricultural chemicals in ground water.	DEQ Section 319 Nonpoint Source Grant Program.	Effective immediately.

Issue 3 - Management and Protection

Rec. No.	Action	Implementing Entity(ies)	Timeframe
3.1	Give priority to projects that: (1) locate and properly seal abandoned bore holes and water wells; and (2) control existing uncontrolled flowing artesian wells..	DNRC Resource Development Grant Program.	Effective immediately.
3.2	Evaluate the adequacy and effectiveness of ground water protection programs. EQC publish a report every four years that: (a) contains the results of the evaluations, including enforcement; (b) describes the status of Montana's ground water resources; (c) reports on implementation of the Ground Water Plan; (d) makes recommendations to improve or modify the Ground Water Plan.	State agencies with ground water programs and EQC.	2003 Legislature and every other legislative session thereafter.
3.3	Ensure compliance with applicable ground water quality standards.	DEQ, MDA, DNRC.	Ongoing effort.

Rec. No.	Action	Implementing Entity(ies)	Timeframe
3.4	Encourage ground water management and protection at the local level.	Watershed groups, with support from CD's, MBMG, DEQ, and DNRC.	Initiate immediately and continue effort.
3.5	Encourage cooperation and communication between state agencies, Local Water Quality Districts, county agricultural extension agents, and local watershed planning groups in addressing ground water issues at the local level.	Ground Water Work Group of the Montana Watershed Coordination Council.	Initiate immediately and continue effort.
3.6	Develop and disseminate information on Best Management Practices and Water Quality Protection Practices to users of and dischargers to ground water, through county governments, county libraries, and the Internet.	DEQ, DNRC, MDA.	Initiate immediately and continue effort.
3.7	Encourage and support local collection centers to assure proper disposal of automotive and household hazardous waste.	DEQ.	Ongoing effort.
3.8	Reauthorize and continue to fund the Regional Waste Pesticide Collection Program.	The Legislature.	Legislative proposal submitted to the 1999 session by MDA.
3.9	Encourage waste minimization programs for all permit applicants where there is a potential for ground water contamination.	DEQ.	Ongoing effort.
3.10	Encourage NRCS to provide funding to locate and properly seal abandoned water wells and boreholes.	DNRC and DEQ.	Ongoing effort.

Issue 4 - Expand Public Awareness

Rec. No.	Action	Implementing Entity(ies)	Timeframe
4.1	Coordinate the development and delivery of educational programs on ground water.	State and local agencies with ground water protection programs.	Ongoing effort.
4.2	Collaborate on conducting a statewide survey(s) to determine ground water education needs and to assess public understanding and knowledge of actions being taken to protect ground water.	The Montana University System: Extension Service, Water Resources Center, Montana Watercourse, and Environmental Studies Program.	Effective immediately.
4.3	Seek funding in collaboration with local ground water protection programs to inform citizens of the benefits and responsibilities of personal and community actions to protect ground water.	DNRC, DEQ, MUS, MT Watercourse, and others.	Initiate immediately and continue effort.

Issue 5 - Understanding and Making Knowledgeable Decisions

Rec. No.	Action	Implementing Entity(ies)	Timeframe
5.1	Support and assist in obtaining funds to provide ground water education programs that: (a) informs how aquifer characteristics affect ground water's sensitivity to pollution; (b) ensures that Montanans understand ground water, and ground water issues; (c) informs about the economic, ecological and health consequences of ground water pollution; (d) informs about activities that can pollute ground water; (e) informs about water conservation and new technologies; (f) informs about the history and problems of flowing artesian wells; and (g) informs about proper well location and construction.	All local, state and federal entities and the Montana Watershed Coordination Council	Initiate immediately and continue effort.

Issue 6 - Technical Assistance, Training, and Action

Rec. No.	Action	Implementing Entity(ies)	Timeframe
6.1	Coordinate additional training on how to accurately report well locations on well logs and enhance the accurate description of geologic materials on well logs and in reports.	BWWC in cooperation with DNRC and MBMG	Ongoing effort.
6.2	Continue to provide enhanced training for water well drillers and consultants on proper well construction methods and techniques to control flowing artesian wells.	BWWC	Ongoing effort.
6.3	Continue water information and education work group and, together with the ground water work group, help coordinate ground water education programs.	MWCC	Ongoing effort.

Rec. No.	Action	Implementing Entity(ies)	Timeframe
6.4	Provide educators with technical support and training to facilitate student involvement in community action projects.	Ground water education programs in Montana.	Initiate immediately and continue effort.
6.5	Inform citizens and industry how they can initiate and lead efforts to protect and manage ground water.	Ground water education programs in Montana with assistance from educational institutions, and local, state and federal agencies. (see Appendix B)	Initiate immediately and continue effort.
6.6	Provide continuing education to businesses, individuals, local governments, and agencies to encourage the use of appropriate technology to enhance, protect, and clean-up Montana's ground water.	Ground water education programs in Montana. (see Appendix B)	Ongoing effort.
6.7	Continue and increase ground water education through local ground water workshops and contacts with individual water users.	Educational institutions, together with local, state and federal agencies.	Ongoing effort.
6.8	Provide public access to sources of information on ground water laws, regulations, technologies, clean-up standards, economic incentives, and available assistance.	Government agencies.	Ongoing effort.

Issue 7 - Administration and Standards

Rec. No.	Action	Implementing Entity(ies)	Timeframe
7.1	Establish an Interagency Remediation Committee	DEQ, MDA, DNRC and BOG	Initiate immediately and continue effort.
7.2	Establish policies to develop and consistently apply water quality and soil standards for clean-up of contaminated sites and use of standards applied to historic contamination.	DEQ, MDA, DNRC and BOG	Initiate immediately and continue effort.
7.3	Inform government, business, and individuals about the requirement to meet water quality standards, and the consequences for not meeting those standards.	DEQ, DNRC, MDA, and BOG	Ongoing effort.
7.4	Establish policies and procedures to consistently and quickly handle permits and or waivers to permits for urgent situations where short-term discharges will occur for clean-up purposes only.	DEQ	Initiate and continue effort.
7.5	Develop rules to require reporting of spills and release of contaminants at unpermitted sites and require reporting historic contamination when it is discovered.	DEQ	Initiate and continue effort.
7.6	Investigate and inventory ground water nonpoint source pollution and determine the need for clean-up, as time and resources allow.	DEQ	Continue effort.
7.7	(1) Encourage inventories of potential contaminant sources in communities that use ground water for drinking water. (2) Assist public water supplies in delineating areas that contribute to water supplies and assess potential threats through the Source Water Protection Programs.	(1) State and local agencies (2) DEQ	Continue effort.

Rec. No.	Action	Implementing Entity(ies)	Timeframe
7.8	Undertake a study to determine the need for and utility of tax and other types of financial incentives to encourage voluntary clean-up and redevelopment of contaminated sites within Montana.	EQC, in collaboration with DEQ Remediation Division, and MDC	Study resolution submitted to the 1999 Legislature.
7.9	Ensure, to the extent possible, that unintended cumulative effects of septic systems will not exceed nondegradation standards.	DEQ and local agencies responsible for the permitting of septic systems.	Ongoing effort.
7.10	Adopt standards and regulations that will prevent pathogen contamination of ground water and protect public health.	BER	Effective Immediately

Issue 8 - Inventory and Characterize Contaminated Sites

Rec. No.	Action	Implementing Entity(ies)	Timeframe
8.1	(1) Maintain and improve the statewide clearinghouse that links the location of contaminated sites regulated by DEQ, DNRC, MDA, BOG, and Local Water Quality Districts. (2) Contribute consistent information to create and maintain the network.	(1) NRIS (2) DEQ, MDA, DNRC, BOG, and Local Water Quality Districts	Ongoing effort.
8.2	Regularly share information on contaminated sites and clean-up activities at those sites through the Interagency Remediation Committee.	DEQ, MDA, DNRC, and BOG	Initiate immediately and continue effort.

Issue 9 - Research and Technology

Rec. No.	Action	Implementing Entity(ies)	Timeframe
9.1	Encourage the evaluation and implementation of innovative technologies for cleaning up ground water contamination.	MUS, in collaboration with DEQ	Ongoing effort.
9.2	Explore and develop options for supporting innovative advancements in technology and cost-effective protection of ground water quality and quantity and the state and local levels.	DEQ and DNRC	Ongoing effort.

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APPENDIX A

**MONTANA GROUND WATER PROTECTION RELATED
PROGRAMS, ACTIVITIES, LEGISLATION, AND
IMPLEMENTING AGENCIES**

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Programs or Activities or Title of Legislation	What it Does	Legislation	Responsible State Agencies
Abandoned Mine Reclamation	Uses federal funds to cleanup abandoned mines operated prior to the 1970's	Title 82, Chapter 4 MCA	DEQ Remediation Division Mine Waste Cleanup Bureau
Agricultural Chemical Ground Water Protection Act	Requires response to pesticide contamination in ground water. MOU describes what activities MDA/DEQ are responsible for implementing.	Title 80, Chapter 15, Part 1 MCA	DEQ Remediation Division, Permitting and Compliance Division, Planning, Prevention and Assistance Division; MDA Agricultural Sciences Division
Ambient ground water monitoring system (see Ground Water Assessment Act)			
Aquifer vulnerability assessment (see Ground Water Assessment Act)			
Aquifer mapping (see Ground Water Assessment Act)			
Aquifer characterization (see Ground Water Assessment Act)			
Board of Water Well Contractors A.K.A. Well driller rules	Establishes rules for well drillers	ARM 36, Chapter 21	DNRC Water Resources Division, Water Operations Bureau
Cesspool, Septic Tank and Privy Cleaners Act	Regulates the pumping and disposal of certain wastes	Title 37, Chapter 41, Part 1 MCA	DEQ Permitting and Compliance Div. Community Services Bur.
Comprehensive Environmental Cleanup & Responsibility Act (CECRA) A.K.A. Montana Superfund	Requires liable parties to cleanup hazardous substances	Title 75, Chapter 10, Part 7 MCA	DEQ Remediation Div Hazardous Waste Site Cleanup Bur. & Mine Waste Cleanup Bureau
Comprehensive Environmental Response, Compensation, & Liability Act (CERCLA) A.K.A. Federal Superfund	Requires liable parties to cleanup hazardous substances. State participates through cooperative agreement with EPA.	Title 75, Chapter 10 Part 6 MCA	DEQ Remediation Div Hazardous Waste Site Cleanup Bur. & Mine Waste Cleanup Bureau
Drinking Water Revolving Loan Fund	Establishes revolving loan program for PWSs	Title 75, Chapter 6, Part 2 MCA	DEQ Planning Prevention, and Assistance Div., Technical and Financial Assistance Bur. and DNRC
Environmental Policy Act	Establishes state policy protecting right to use property and to promote efforts to prevent environmental damage	Title 75, Chapter 1, Part 1 MCA	DEQ Planning, Prevention, and Assistance Div., Resource Protection Planning Bur.; DNRC and others
Generic Pesticide state management plan (see Agricultural Chemical Ground Water Protection Act)			

Programs or Activities or, Title of Legislation	What it Does	Legislation	Responsible State Agencies
Ground water appropriations (see Water Rights)			
Ground water controlled area (see also Water rights)	Establishes surface area boundaries of area from which ground water withdrawal is regulated. Can be based on ground water quantity or quality.	Title 85, Chapter 2 MCA	DNRC, Water Resources Division
Ground water discharge permits (see Ground Water Pollution Control System)			
Ground water best management practices (see Agricultural Chemical Ground Water Protection Act and Water Quality Protection Practices)			
Ground water use legislation (see Water Rights)			
Ground water standards & classifications (see Ground Water Pollution Control System)			
Ground Water Assessment Act	Establishes comprehensive program to assess and monitor state ground water resources	Title 85, Chapter 2, Part 9 MCA	Montana Bureau of Mines and Geology at Montana Tech of UM
Ground Water Plan (see State Water Plan)			
Ground Water Pollution Control System (MGWPCS)	Establishes ground water standards and permit requirements for discharges into ground waters. Also states emergency powers of DEQ/what RPS must do in the event of a spill.	ARM 17, Chapter 30, Subchapter 10	DEQ Permitting and Compliance Division, Water Protection Bureau Remediation Division, Site Response Section
Hazardous Waste Management Act	Regulates hazardous material management	Title 75, Chapter 10, Part 4 MCA	DEQ Permitting & Compliance Division
Interagency coordination for ground water protection initiatives	Establishes agreement between resource management agencies to ensure cooperation	formalized by Memorandum of Understanding (MOU)	DNRC, DEQ, MDA
Local Water Quality Districts	Authorizes/describes establishment of LWQDs	Title 7, Chapter 13, Part 45 MCA	DEQ Planning, Prevention, and Assistance Div, Pollution Prevention Bur., and local government
Major Facility Siting Act	Establishes policy to ensure power generation or conversion facilities do not produce adverse environmental impacts	Title 75, Chapter 20, Part 1 MCA	DEQ Planning, Prevention, and Assistance Div., Resource Protection Planning Bur.

Programs or Activities or Title of Legislation	What it Does	Legislation	Responsible State Agencies
Metal Mine Reclamation Act (see Mine Reclamation)			
Mine Reclamation	Establishes siting and reclamation requirements for coal, metal, and aggregate mining	Title 82, Chapter 4 MCA	DEQ Permitting & Compliance Division
Montana Pollutant Discharge Elimination System (MPDES)	Establishes discharge permit requirements, pollutant limits, and treatment standards for discharges into surface waters	ARM 17, Chapter 30, sub-chapters 12-14	DEQ Permitting and Compliance Div., Water Protection Bur.
Nondegradation policy and criteria for determining nonsignificance	Prohibits degradation of high quality state waters	ARM 17, Chapter 30, sub-chapter 7	DEQ Planning, Prevention, and Assistance Div., Resource Protection Planning Bur.
Oil and gas exploration and development permits	Establishes permit system for exploration	Title 82, Chapter 1 MCA	DNRC Oil and Gas Conservation Div.
Open Cut Mining Act (see Mine Reclamation)			
Petroleum Storage Tank Cleanup	Establishes procedures for investigation and remediation at petroleum releases	Title 75, Chapter 11, Part 3 MCA	DEQ Remediation Div., Hazardous Waste Site Cleanup Bur.
Petroleum Tank Release Cleanup Fund	Authorizes funding mechanism to cleanup leak sites	Title 75, Chapter 11 Part 3	Petroleum Tank Release Compensation Board (administratively attached to DEQ)
Pollution prevention program	Provides pollution prevention technical assistance and information		Montana State University Extension Service P2 Program
Public water supply and sewer system program	Establishes minimum standards for construction and operation of public systems	Title 75, Chapter 6 MCA	DEQ Permitting and Compliance Div., Community Services Bur.
Reclamation and Development Grant Program	Provides funding for reclamation of mined areas, identification and repair of hazardous waste sites, and research	Title 90, Chapter 2 MCA	DNRC Conservation and Resource Development Division
Renewable Resource Development Grant	Provides funding to protect, conserve, or develop renewable resources including water.	Title 85, Chapter 1 MCA	DNRC Conservation and Resource Development Division
Resource Conservation and Recovery Act (RCRA)	Montana has primacy for implementation of the Act that regulates hazardous materials	42 U.S.C. § 6901 et seq.	DEQ Permitting & Compliance Division
Resource Indemnity Trust	Source of funds for clean up of contaminated sites		DNRC

Programs or Activities or, Title of Legislation	What it Does	Legislation	Responsible State Agencies
Safe Drinking Water Act	Directs EPA to establish drinking water standards and monitoring program, UIC program, SRF program, and provides for enforcement of same. Directs states to develop source water protection program and operator certification program	40 U.S.C. § 141 P.L. 104-182	DEQ Permitting and Compliance Div., Community Services Bur., and Planning, Prevention and Assistance Div., Pollution Prevention Bur.
Salinity control	Inventories saline sites and provides technical assistance, works closely with USDA NRCS and local CDs		Montana Salinity Control Association; and DNRC
Sanitation in Subdivisions Act	Establishes policy to control water supply and sewage disposal at subdivisions	Title 76, Chapter 4, Part 1 MCA	DEQ Permitting and Compliance Division, Water Protection Bur.
SARA Title III Program (see Comprehensive Environmental Cleanup & Responsibility Act)	This is the Superfund Amendments and Reauthorization Act		
Septic System Standards	Establishes policy to require county board of health regulations establish minimum standards for on-site sewage treatment systems	Title 50, Chapter 2, Part 1 MCA	DEQ Permitting and Compliance Div., Community Services Bur.
Small Business Assistance Program	Provides pollution prevention technical assistance and market development	Federal Clean Air Act 42 U.S.C § 507	DEQ Planning, Prevention and Assistance Div, Pollution Prevention Bureau
Solid Waste Management Act	Establishes authority to regulate solid waste management systems; sets goals for waste reduction in Montana	Title 75, Chapter 10, Part 2 MCA	DEQ Permitting and Compliance Division, Community Services Bur.
Source Water (Wellhead) Protection Program	Authorizes implementation of Montana Wellhead Protection Program	Title 75, Chapter 6 MCA	DEQ Planning, Prevention, and Assistance Div., Pollution Prevention Bur.
Source Water Assessment Program	Establishes procedures to delineate and assess the source of water used by PWSs		DEQ Planning, Prevention, and Assist Div., Pollution Prevention Bur.
State Superfund-CECRA (see Comprehensive Environmental Cleanup & Responsibility Act)			
State Water Plan	Directs DNRC to prepare continuing comprehensive inventory of water resources and develop management plan	Title 85, Chapter 1, Part 2 MCA	DNRC Water Resources Div.

Programs or Activities or, Title of Legislation	What it Does	Legislation	Responsible State Agencies
Storm Water Discharge Permit (see Montana Pollutant Discharge Elimination System)			
Strip and Underground Mine Siting Act (see Mine Reclamation)			
Subdivision and Platting Act	Establishes policy to require minimum standards for plats, and to ensure subdivisions are in the public interest	Title 76, Chapter 3, Part 1 MCA	local government
Federal Superfund- CERCLA (see Comprehensive Environmental Response, Compensation & Liability Act)			
Underground Storage Tank Act	Establishes minimum standards for tank installation, operation, and maintenance	Title 75, Chapter 11, Part 5 MCA	DEQ Remediation Div., Technical Services Bur.
Underground injection control program	State has primary to regulate waste injection associated with oil/gas production A.K.A. Class II Injection Wells. All other classes are regulated by U.S. EPA	Federal Safe Drinking Water Act, Part C	DNRC Oil and Gas Conservation Div., & Montana office of U.S. EPA
Waste Water Revolving Loan Fund	Establishes revolving loan program for waste water systems	Title 75, Chapter 5, Part 11 MCA	DEQ Planning, Prevention and Assistance Div., Technical and Financial Assistance Bur. and DNRC
Water Rights	Establishes policy and authority to manage water rights through permit system and adjudication process and system to reserve water for future use	Title 85, Chapter 2 MCA	DNRC Water Resources Div.
Water and Wastewater Operators Certification	Establishes program to ensure certification and continuing education of operators of public systems	Title 37, Chapter 42 MCA	DEQ Permitting and Compliance Div., Operator Certification Program
Water Quality Act	Establishes authority to protect, maintain, and improve water quality	Title 75, Chapter 5 MCA	DEQ Enforcement Division & Remediation Division
Water Quality Protection Practices	Describes activities or procedures that protect water quality	Title 75, Chapter 2, Part 1 MCA	DEQ Planning, Prevention, and Assistance Div., Resource Protection Planning Bur.
Water Well Standards	Establishes construction standards for water wells	Title 37, Chapter 43 MCA	DNRC Water Resources Div., Water Operations Bur.

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APPENDIX B

GROUND WATER EDUCATION PROGRAMS IN MONTANA



GROUND WATER EDUCATION PROGRAMS IN MONTANA

A. Drinking Water Treatment Program (MSU Extension Service)

An education program dealing with residential treatment of drinking water. The program focuses on methods of treatment as well as treating many common water problems found in Montana private water systems. (Contact: Mike Vogel 994-3451)

B. Farm*A*Syst (MSU Extension Service)

The Montana Farmstead Assessment System (Farm*A*Syst) is designed to enable farmers and other rural residents to use a voluntary, systematic approach to assess the site of their drinking water well and increase awareness of ground water contamination hazards. It teaches well owners to identify and rank the specific risks that may threaten their drinking water, and encourages and facilitates the development of an individual action plan to reduce pollution risks. (Contact: Scott Lorbeer, 994-6070)

C. Local Water Quality District Programs

Local Water Quality Districts are defined areas established to protect, maintain and improve the quality of state ground and surface water for human health and the environment. Water Quality District programs may include the development of public awareness and education campaigns, wellhead protection of public water supplies, identification and monitoring of known sources of ground water contamination, etc. Water Quality Districts have been established in Helena, Bozeman, and Missoula. The Lewis and Clark Water Quality Protection District (Helena) has developed "Water Watchers," a water quality protection program for fourth graders, which includes a field trip and a one-hour classroom presentation.

D. Know Your Watershed Workshops (Montana Watercourse, MSU)

The Montana Watercourse works with community-based groups to develop custom-designed watershed education workshops on the general theme of "Know Your Watershed." Using a collaborative planning process, local water users and community members develop a workshop content agenda specific to the watershed. Topics covered generally include the characteristics,

operation and management of surface and ground water, and related land resources in the watershed. The workshop goals are: (1) to increase participants' knowledge and understanding of their watershed; (2) to share the facts about water/land use, water quality, surface/groundwater supplies, and the way these are interrelated; (3) to provide an opportunity for public dialogue among all stake holders and community members regarding the many demands and uses of the watershed; (4) to provide information and resources on other watershed planning and management initiatives being used in Montana and the West; and (5) facilitate communication and collaboration among water resource "experts" and communities needing their expertise. (Contact: Mary Ellen Wolfe 994-1910)

E. Midwest Assistance Program, Inc.

Midwest Assistance Program (MAP) is a non-profit, technical assistance organization dedicated to helping small, rural communities and other entities find affordable and acceptable solutions to their water, wastewater and solid waste problems. MAP provides on-site technical, development and management assistance to communities. Other entities, such as reservations, mobile home parks, water and sewer districts, and other areas are also beneficiaries of MAP's assistance. (Contact: Judy Sass 273-0410 or Lee Michalsky 494-1858)

F. Montana Ground Water Assessment Program (MT Bureau of Mines & Geology)

F1. Monitoring Program: The result of the Montana Groundwater Assessment Act, the monitoring program builds-on and expands existing ground-water monitoring in the state. At completion, the monitoring program will establish at least 730 monitoring points in various parts of the state. The wells will be measured quarterly for the long term. Approximately 10 percent of the network will have water-level recorders installed for periods of time of up to three years and the recorders will be rotated periodically to other wells. Ten percent of the wells will be sampled each year to assess long-term changes in water quality. Data are placed in the Ground-Water Information Center and will be available in various GIS coverages. (Contact: Ground Water Information Center, Montana

Bureau of Mines and Geology, 1300 West Park Street, Butte, Montana 59601. 496-4167)

F2. Ground Water Characterization Program: The Montana Ground-Water Characterization Program will map the distribution and document the water quality and physical properties of the state's aquifers. The Montana Ground Water Assessment Act of 1992 established the characterization program whose purpose is to provide information to help the public and private sectors make decisions on how to manage, protect, and develop Montana's ground water resources.

F3. Ground Water Information Center: Water-well log, water quality, static-water level and other information related to ground water is housed at the Information Center and are available to decision-makers and other interested people upon request. Data generated by the Ground-Water Assessment Act, other programs at the Bureau of Mines, and other agencies are also placed in the Information Center. (Contact: Ground-Water Information Center, Montana Bureau of Mines and Geology, 1300 West Park Street, Butte, Montana 59601 496-4167)

G. Montana Environmental Training Center (METC) Programs

A variety of technical training opportunities are provided by METC which either directly or indirectly affect ground water. Annually, these include Fall Water School at MSU, Spring Water School in Miles City, Cross-Connection Training, Safe Drinking Water Act New Sampling and Monitoring, an Advanced Wastewater Workshop on activated sludge concepts, and Ground Water Protection. METC's goal is to develop and implement effective training and provide technical guidance for water and wastewater operators, water well contractors, and other environmental and public health professionals. (Contact: Jan Boyle, METC Coordinator 454-2728)

H. Montana Materials Exchange Program

MSU Extension Service and the Montana Chamber of Commerce. A program to help individuals, groups and organizations exchange waste materials, recyclables and other products. One program goal is to reduce waste deposited at landfills (and thereby decrease possibilities of ground water contamination). Includes a bulletin board service. (Contact: Reeves Petroff, 994-3518)

I. Montana Salinity Control Association (MSCA)

A satellite program through the conservation district, MSCA provides ground water investigation for saline soil and water reclamation. MSCA works on a voluntary basis with individuals and small watershed projects, with a portion of the technical assistance fee-based. In addition to the reclamation plans, MSCA provides BMP education programs to agricultural producers, natural resources staff and other land-use management groups. The state program is based in Conrad. (Contact: Jane Holtzer 278-3071)

J. Private Pesticide Applicator Certification Training (MSU Extension Service)

All private pesticide applicators must participate in a one-day training every five years in order to maintain their certification. MSU Extension regularly provides the Water Quality section of this training, and this includes information relating to the protection of ground water quality. (Contact: Greg Johnson, 994-3861)

K. Pollution Prevention Program (MSU Extension Service)

Non-regulatory, confidential education and technical assistance for Montana's small businesses on air, water, and solid & hazardous waste pollution prevention. Publications, workshops and individual technical assistance help businesses profit by decreasing waste disposal and treatment costs, regulatory oversight and long-term liability and increasing business efficiency and worker safety. Current business focus types include: automotive, dry cleaning, autobody, printing and hotel/motel. In conjunction with the Montana Chamber of Commerce, operates the Montana Materials Exchange for businesses networking to "turn potential waste into savings." (Contact: Mike Vogel 994-3451)

L. Project WET Montana (Montana Watercourse)

Project WET Montana, the youth and teacher-training program of the Montana Watercourse, is disseminating ground water information, training, and materials at all Project WET workshops. The training consists of hands-on participation and practice with numerous ground water teaching activities for K-12 teachers from the Project WET Activity Guide. In addition, most Project WET

workshops also have training and practice with the Project WET Montana Ground Water Flow Model Education Trunk. Seven Ground Water Flow Model Education Trunks are available for use by teachers and resource personnel across Montana. Other ground water materials disseminated by Project WET Montana include numerous pamphlets, informational brochures, posters, and videos supplied by various local, state and federal agencies. Over 40 workshops reaching more than 1000 Montana educators are conducted each year. (Contact: John Etgen, Project WET Montana Coordinator at 994-6671)

M. Solid Waste Institute of Montana (SWIM)

Several Solid Waste Programs relate to and/or address ground water in Montana. These include Training for Landfill Operators and Local Officials; a Household Hazardous Waste Consumer Education Program; a Municipal & Backyard Composting Education Program; a Precycle Community Education Program; and a Solid Waste Education for Youth program. SWIMNET provides computer access and teleconferencing regarding pollution prevention and includes training, registration, information resources, regulatory issues, special wastes, landfill operations, and source reduction. (Contact: Mike Vogel 994-3451)

N. Water/Wastewater School

A week-long school held several times per year around the state for water and waste water treatment plant operators and managers and co-sponsored by the Montana Department of Environmental Quality, the Montana Environmental Training Center, and the Montana University System Water Center at MSU. (Bill Bahr, 444-5337 or Eric Minneti, 444-4769)

O. Wellhead Protection Program (Montana Rural Water Systems)

Offers information for city governments about well-head protection, also provides classes for interested citizens, local officials, water and wastewater operators and others on wellhead protection and well construction. (Contact: Montana Rural Water Systems 454-1151)

P. Wellhead Protection Program (Planning, Prevention and Assistance Division, DEQ)

A voluntary program designed to protect ground

water used for public water supply in Montana from contaminants which may have an adverse effect on human health. Emphasizes local control, education and training for professionals working with drinking water systems. Includes a school-based program for protecting water supply systems located on public school grounds. (Contact: Joe Meek 444-4086)

Q. Montana Water Information System

(MIS) is a component of the Natural Resource Information System (NRIS) in the Montana State Library. MIS is a water data clearing house and referral service linking users with the best source of information. The System provides access to all types of water information including data on ground water, surface water, water quality, precipitation, snow pack, and water rights. MIS staff provide training and technical assistance on how to access sources of ground-water information, and on the use of computer software for reformatting the information to make it more usable. (Contact: Duane Anderson 444-5356)

R. Montana Ground Water Atlas

Using data supplied by the Bureau of Mines & Geology, an atlas is available showing the state's major aquifer systems. A hard copy publication will also be maintained electronically, and will be available over INTERNET and in electronic format for schools. Data layers in the Atlas can be included in educational programs and packages and distributed to counties that rely on ground water.

S. Bureau of Land Management

The Bureau of Land Management (BLM) is a cooperator in the Montana Ground Water Assessment Program and is represented on the advisory and technical committees. BLM funds monitoring of ground water quantity and quality effects from coal mining, studies on ground water availability and aquifer impacts from flowing wells. BLM also conducts ground water education for schools and at fairs utilizing a ground water demonstration trunk.

T. County Conservation Districts

Conservation Districts provide for the conservation and wise use of soil and water resources, including ground water. Districts address resource management needs locally

through educational activities and projects; including workshops, classroom programs, resource tours, demonstration projects, public forums, resource assessments, and conservation projects. Districts acquire technical and financial assistance from state, federal and private sources to address local natural resource management issues. There are 58 Conservation Districts in Montana. (Contact: County Conservation District or the Montana Association of Conservation Districts 443-5711)

U. Reader's Service - Water Information Program (Montana University System Water Center)

The explosion of literature regarding water issues and information has made it extremely difficult for the water professional and/or user to keep up with current information. The purpose of this ongoing Reader's Service (a component of our information transfer mission) is to provide a lending library by mail of "grey" literature relative to water resources on a bi-monthly basis. The Center is currently in the midst of a needs assessment survey to determine if this service should be streamlined to provide information only on specific topic areas. Our mailing list has been revamped to include all major government offices within Montana (both state and federal), university-system campus staff, organizations and individuals with an interest in water issues. If you have any publication and/or information that may be of interest to others please let us know and we'll be glad to distribute it. (Contact: Kathy Stephens 994-6690)

V. Commercial and Governmental Pesticide Applicator Recertification Training (Montana Department of Agriculture)

All commercial and governmental pesticide applicators must participate in training courses to obtain 12 credit hours of educational information in a four year period or take a re-examination to maintain an applicator license. Training courses includes information on protecting ground and surface water quality from pesticide contamination. (Contact: Kim Johnson, 444-5400)

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